17th Annual Report

Department of

FISHERIES

for the fiscal year ended march 31, 1981

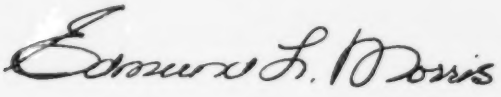
province of
nova scotia

To His Honour
The Honourable John E. Shaffner
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the Seventeenth Annual Report of the Department of Fisheries, for the fiscal year ending March 31, 1981.

Respectfully submitted,



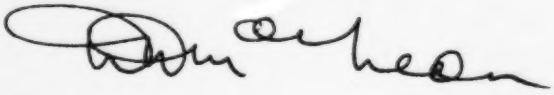
Edmund L. Morris
Minister of Fisheries

To
The Honourable Edmund L. Morris
Minister of Fisheries

Sir:

I have the honour to submit the Seventeenth Annual Report of the Department of Fisheries, for the fiscal year ending March 31, 1981.

Respectfully submitted,



D.A. MacLean
Deputy Minister

CONTENTS

1. The Fishing Industry 9

2. Industrial Development 10

3. Fishermen's Loan Board 18

4. Training and Field Service

    a) Training 21

    b) Field Service 25

5. Marine Resources 27

6. Estuarine and Inland Fisheries 29

7. Planning and Finance 33

8. Statistical Review 37

9. The Department of Fisheries 52

THE FISHING INDUSTRY

Landings of commercial marine species in Nova Scotia improved slightly in 1980; however, the record 1978 catch was not reached. The landed value, however, continued its upward trend.

Nova Scotia fishermen landed 447,700 metric tons of fish, shellfish and marine plants in 1980, representing an 8 per cent increase over the 1979 landings of 415,200 metric tons. The landed value of the catch increased 7.5 per cent to $230.9 million.

Scallops continue to be the most important species in landed value, returning $63.7 million to this sector of the fishery. The landed value of cod has been increasing steadily, reaching $42.7 million in 1980, while the lobster value remained virtually unchanged over the previous year at $33.7 million.

Groundfish landings increased 13.4 per cent and the landed value of this species group increased 22 per cent. The pelagic and estuarial species group showed increased landings of 45.4 per cent with an increase in landed value of 23.4 per cent. The mollusc and crustacean species group did not fare as well in 1980. There was an overall decrease in landings of 24.1 per cent. This significant decrease in landings was almost entirely caused by a major reduction in scallop landings. In spite of continued strong prices for scallops, the decrease in landings caused the overall value of the species group to suffer a decrease of 5.9 per cent.

During the year, the Government adopted the first policy document related specifically to the fisheries. The intent of the document is to describe a broad environment within which the Nova Scotia fishing industry can operate efficiently and profitably and one that the province will strive to achieve. The focus in the document is on general policy from which detailed programs will flow and take direction.

INDUSTRIAL DEVELOPMENT

The Industrial Development Division provides both financial and technical assistance for the further development of the Nova Scotia fishing industry. As part of the overall objectives, improving fish quality, safety and productivity are of prime importance.

Financial assistance provided by the division was generally based on a 50 per cent cost-sharing arrangement with the applicant, up to a maximum contribution of $15,000. Technical assistance was also available upon request for projects undertaken by industry, with emphasis being given to innovative projects or to new technological developments.

Technology Development - Shore Based Facilities

A number of projects were funded in this area of activity. Toward the end of the fiscal year, a study was begun on fish waste processing in the province, with results being expected in the next year. Work continued with various processors on dehumidified fish drying. With the aid of the technical staff, a refrigerated lobster storage system was installed in a processing facility and a small dulse processing facility was established.

The technical staff, as well, continued to provide input into more conventional projects such as coolers, bait freezers and plant design.

Technology Development - Fishing Vessels

Efforts continued to further develop the Nova Scotia fishing fleet. A joint federal-provincial agreement resulted in the design of a 52-foot aluminium longliner-gillnetter. Work will continue to determine the feasibility of this vessel in the Nova Scotia fishery.

Technical staff members were also involved in several vessel conversions where their knowledge was essential to the design of proper deck lay-outs and gear arrangements.

Two projects were completed with the offshore fleet, where several vessels were converted so that a portion of their catch was boxed and iced. Initial results were very encouraging in that the quality of the landed fish was noticeably improved. Further such conversions are expected to take place in the next fiscal year.

Technology Development - Fishing Gear

The emphasis of this section of the Industrial Development Division was to develop more efficient catching methods for traditional and under-utilized species.

Work continued on more efficient otter trawls. A European star balloon trawl was built and supplied to a group of pair trawlers. Results have been very encouraging.

Further trials were conducted with automatic jigging machines. Of special interest was the unit developed and built in Nova Scotia, as well as a Japanese model which was introduced on the market in mid-year.

Random baiting systems were evaluated with four such units being installed in the province. These systems were produced on the west coast, and serious efforts were being made to encourage a Nova Scotia firm to manufacture this type of equipment. Various random baiting units built in Newfoundland were also investigated.

In co-operation with a squid processing company, a mechancial squid jigging system was installed on a 42-foot vessel. A lack of squid on the southwestern shore, however, did not allow an adequate trial to be conducted.

Technology Development

A reorganization within the Department resulted in the transfer to the Industrial Development Division of this resource technology group. Financial and technical assistance to processors and other fishing interests is provided by this group for developmental projects. Of primary importance were projects dealing with the development of processing technology for under-utilized species. The following serves to summarize the various areas of activity.

(a) Jonah Crab

Demonstrations to effectively process this species were done at Pinkneys Point, Yarmouth County. In addition to the minced products produced, evaluation was done on manually extracted whole meat, individually quick frozen (I.Q.F.) packs, as well as individual main claw sections packaged as hors d'oeuvres specialties. These products were presented at the Hostex Food Show in Toronto for trade exposure and evaluation.

(b) Rock Crab

Trials of a processing cycle utilizing the Northumberland species were carried out at Caribou during the lobster 7B1 season. Substantial amounts of minced product were commercially processed with the crab meat being used in the production of higher value-added products.

(c) Crab Paté

Attention was given to increasing the utilization of the inshore crab through the production of deboned specialty products. One such item now being commercially produced is a canned crab paté. Product trials utilizing the positive characteristics of the Queen crab paste (colour and texture), with the flavour and meat yield factors of rock crab, showed potential and warrant further research.

(d) Mackerel

The effectiveness of the Department's La Pine silver hake gutting machine in processing mackerel was trial tested on a limited basis. Results indicate that this unit could efficiently process this species without major modifications. Economical gutting and naping would provide incentive and flexibility for the further development of various species products. Alterations to the cleaning stations of the La Pine are planned for the coming year.

(e) Cultured Mussels

Due to the growing demands of the fresh market for the product, no canning of mussels occurred during the year. To aid expansion of this resource, activity input will be directed towards developing an automatic long line harvester. The intended function of such a unit will be to separate, decluster and grade the mussels as they are being retrieved from the collector.

(f) Herring Paté

Additional evaluations on the product characteristics of this canned paté in areas of colour, flavour, texture and shelf stability were done at a plant site in Yarmouth. Quality and palatability were judged quite acceptable at the end of a 12-month assessment period.

(g) Eel Processing

Smoking techniques using the Department's AFOS smoker were successfully conducted at the request of a company involved with the eel fishery. Emphasis was centred on a hot smoked product, samples of which were promoted successfully at a recent European food exhibition.

(h) Flatfish Definner

A co-ordinated project with the Technical University of Nova Scotia and industry to develop this new type of fish processing equipment was continued during the past year. Designed primarily for under-utilized sizes of flatfish, the unit produces a headless, tailless product by eviscerating and removing the complete dorsal and anal fin with rotary cutters. The trial unit appears to be feasible and attractive to industry involved with the inshore flatfish fishery, based on processing efficiency, yield and production output.

(i) By-Product Utilization

(i) Commercial amounts of shell-free lobster body meat were effectively produced using the Department's 1.2 mm deboning drum. This product will be utilized by one processor in producing a new gourmet lobster bisque canned item.

(ii) Due to the relatively large shell and waste discards resulting from lobster, Queen and rock crab processing investigations were begun into potential ways of utilizing these by-products. A research project into the chemical properties of shell and associated material has been recently completed by Acadia University. Initial emphasis and direction will be in utilizing these products in the area of feed supplements and horticulture applications.

(iii) Approximately 5,000 pounds of fish silage were produced from groundfish discards in a project which was done at Victoria Vale. The product will be tested at the experimental farm at Nappan as a protein feed in hog farming.

(j) Lobster Bait Bag

Testing of minced lobster bait, produced from non-edible fish parts, continued in districts 7B1 and 4 of the province. Light and heavy salted herring, minced, was compared to whole fish bait. The experimental bait

was fished unchanged for 5 to 7-day cycles giving a 4 to 5-fold reduction in bait consumption as compared to conventional practices.

As major differences in temperature existed at the two test sites, additional research will be carried out to study bait and mesh characteristics as affected by cold water conditions.

Financial Incentives - Fleet Development

The objective of this program was to upgrade the existing fleet in order to take full advantage of the available resource. Of key interest to the division in all its programs are matters relating to safety and this was evident by the establishment of a life raft program during the year. Eligible applicants received a 50 per cent cost-sharing grant for the purchase of approved life rafts.

A program to fit propellor nozzles to 42 to 65-foot fishing vessels as a means of improving fuel efficiency was also initiated. All installations of these energy saving devices were monitored by our technical staff.

Over 60 fish-hold refrigeration and insulation projects were completed under a cost-sharing arrangement. Eligible applicants had to comply with construction guidelines developed for this type of vessel upgrading.

Several vessels were equipped with fish gutting machines on a trial basis. These installations were evaluated by members of the technical staff and consideration is being given to a full fledged program in this area, the intent being to further improve productivity and the quality of landed fish.

Financial Incentives - Harbour Facilities

(a) Private Wharf Program

Eligible applicants were assisted with the construction of new wharf facilities under this program. The Department paid the full cost of approved materials up to a maximum of $10,000 per project. This program will be altered slightly for the upcoming fiscal year in order to benefit more fishermen by giving priority to those projects jointly undertaken by groups of fishermen.

(b) Fishermen's Service Sheds

This program provided financial and technical assistance to groups of

fishermen wishing to construct multi-unit fishermen's service sheds. Funding was based on the number of individuals involved. The effectiveness of this program is now being reviewed by our technical and administrative staff.

(c) Fishermen's Slipway - Haul-Outs

Two projects were completed which assisted in the construction of marine haul-outs. In addition, certain types of needed equipment such as winches, winch houses and wharf derricks were supplied to selected Small Craft Harbours facilities.

Financial Incentives - Infrastructure

(a) Water Hook-up and Improvements

Given the lack of adequate fresh water in some areas of the province, the division provided financial assistance for many plants in Nova Scotia which were developing or upgrading their own water supply systems. The program was co-ordinated with the Nova Scotia Department of the Environment and 50 per cent cost-sharing was provided to a maximum amount of $2,500.

(b) Improved Electrical Service

A number of projects were undertaken to improve existing electrical facilities in and around fish processing facilities. Of primary importance was the effect which such improvements would have on energy consumption.

Financial Incentives - Quality

(a) Ice Making and Storage

The lack of a federal program for ice making equipment placed a heavy burden on the division's existing program. Eligible applicants received 50 per cent cost-sharing up to a maximum of $15,000 for ice making machines, storage bins and necessary conveyors for ice.

(b) Cool and Cold Storage

This program enabled fish plant operations to construct adequate cool and cold storage facilities in order to hold raw material and-or finished

product. During the past fiscal year, 17 projects were completed under this program. The majority of these related to the construction of fresh and salt fish storage facilities.

(c) Fish Handling Containers

The division provided 50 per cent cost-sharing on the purchase of fish handling containers and salt fish tanks by fishermen and processors. These containers were constructed of approved material, usually plastic or fibreglass. The primary objective was to improve the quality of the landed catch.

Many processors were using the plastic or fibreglass wharf box which can be used in a dual capacity. These containers are excellent for handling fresh fish as well as the storage of salt fish. The division, as well, provided such assistance to vessel owners wishing to replace existing fish kids with plastic boxes or fibreglass containers.

Financial Incentives - Productivity

(a) Trawl Tub Storage

A marked increase in the number of tubs fished per boat and a general shift to longlining from other types of fishing has placed a strain on existing trawl tub storage facilities. This program has been developed to alleviate this problem by assisting in the expansion of existing facilities as well as the construction of new ones.

(b) Onboard Gear

Over 100 applicants received cost-sharing for the purchase of electronic deep sea fishing reels. This equipment provides special benefits to the in-shore sector, since it improves productivity and working conditions in this energy efficient and conservation oriented fishing method.

The lobster storage tank program was continued with more than 50 applicants successfully completing their projects. The division provided a $100 incentive grant toward the construction of each tank; these tanks were installed in the fishing boats to improve the storage of live lobsters.

(c) Bait Freezing and Storage

There was a significant demand for bait storage and herring facilities in

the province, with special emphasis on Cape Breton because of the increase in longlining in that area. The majority of these projects were funded jointly by the Department and fishermen's groups. Priority was given to those projects which provided benefits to the maximum number of fishermen in each port.

(d) Unloading and Conveying Facilities

The division provided financial incentives for more efficient means of unloading which also minimized damages to the fish. The auto-dumper developed jointly by a Prince Edward Island manufacturer and a Nova Scotia fish processor has been a marked improvement in this area.

(e) Plant Development

This area of activity provided assistance for new and innovative methods of fish processing.

FISHERMEN'S LOAN BOARD

During the 1980-81 fiscal year, the Fishermen's Loan Board considered 914 loan applications, of which 738 were approved, 160 were rejected, eight deferred and eight withdrawn on the request of the applicants. Even though the number of applications considered was only 15 less than the previous year, 114 fewer loans were approved. Further, there were no loans for large vessels with freezing capacity as in 1979-80. The gross value of boats represented by approved loans totalled approximately $44,745,000. After down payments and subsidies were deducted, however, the net total of approved loans amounted to $39,438,410. Vessel subsidies, both federal and provincial, amounted to $867,556 on 46 applications.

The following table compares loan activity over the past five years:

Year Ending Mar. 31	Loans Considered	Loans Approved	Net Amount Approved	No. of Loans Outstanding	Amount Outstanding
1977	169	158	4,598,894	550	11,447,362
1978	179	169	3,190,554	602	11,406,098
1979	641	607	30,400,000	1,081	21,400,000
1980	929	852	52,550,000	1,765	59,082,800
1981	914	738	39,438,410	2,108	92,434,367

In addition to the outstanding loans of $92,434,367, there were commitments amounting to $17,933,411 at year end.

Advances during the year amounted to $48,329,486 and repayments on loans amounted to $10,395,254.

A breakdown of the types of loans approved is as follows:

	No.	Amount
New boats to 44'	209	$ 9,638,549
New boats 44' 11"	27	5,292,472
New draggers or seiners 45'-100'	14	4,826,834
New longliners 45'-100'	14	4,126,042
New boats over 100'	2	2,904,656
Used boats under 45'	162	5,350,700
Used boats 45'-100'	15	2,851,078
Used boats over 100'	1	2,070,000
Diesel engines	36	494,130
Gas engines	22	69,065

	No.	Amount
Electronics	174	974,720
Deck equipment	51	579,945
Conversion	8	202,529
Aquaculture	3	57,690
	738	$39,438,410

Loans approved by counties were as follows:

Annapolis	11	$ 3,008,939
Antigonish	19	287,062
Cape Breton	61	3,786,049
Colchester	2	35,100
Cumberland	4	67,393
Digby	73	6,876,500
Guysborough	47	1,428,002
Halifax	59	1,686,877
Inverness	51	1,123,741
Kings	7	217,062
Lunenburg	15	1,115,417
Pictou	44	427,598
Queens	13	573,677
Richmond	21	296,442
Shelburne	186	12,340,381
Victoria	23	620,258
Yarmouth	100	5,547,912
	738	$39,438,410

Technical and Inspection Services

During the 1980-81 fiscal year, 245 new boats of all sizes were completed with Loan Board financing. Technical services were provided both during the preliminary planning and during the actual construction of these boats. Progress inspections on 327 occasions were made by the inspection staff. At the end of the fiscal year, 82 boats were at various stages of construction and subject to further inspection. In addition, 216 used boats were inspected and appraised; 239 boats were inspected for gear, engine and conversion loans; and seven boats were measured for registry. Inspections for maintenance and housekeeping were made on 158 boats.

The following new builders were added to the Board's list of approved builders:

Leo Atkinson, South, Side, N.S.
Gaudet Boatbuilders Ltd., Cheticamp, N.S.
Tri County Fibreglass Ltd., Wedgeport, N.S.
Atlantic Shipbuilding Ltd., Lunenburg, N.S.
Hubbies Boatbuilders Ltd., Clark's Harbour, N.S.
Chedabucto Shipwrights Ltd., Port Hawkesbury, N.S.
C..and W. Boatbuilders Ltd., South Side, N.S.
LeBlanc Bros. Construction Ltd., Lower East Pubnico, N.S.
Cape Craft Industries Ltd., Clark's Harbour, N.S.
Murray D. Stevens Ltd., Chester, N.S.
James MacPhee, Big Bras d'Or, N.S.
Earl and Ronald Swaine, North West Harbour, N.S.

TRAINING AND FIELD SERVICE

TRAINING

The Department's training programs serve the needs of the Nova Scotia fishing industry, other government agencies and fishermen from overseas.

New records were achieved for 1980-81 in terms of the number of participants (1,100, or about 10 per cent of the province's fishermen), number of courses (96), and the success rate in the Transport Canada examinations.

To further maintain and improve the training service to the fishing industry, several new programs are being introduced for 1981-82. These are in the areas of refrigeration, quality control and a pre-sea course for new entries to the industry.

The following table outlines the programs provided:

	INSHORE	OFFSHORE	PROCESSING
NAVIGATION	Small Craft Master Fishing Master Class IV	Fishing Master I Fishing Master II Fishing Master III	
ENGINEERING	Small Gas and Diesel Diesel Engines Hydraulics	Watchkeeping Engineer Fishing Vessel Chief Engineer 4th Class Engineer	Refrigeration for Small Plant Operator Assistant to Plant Engineer *
FISHING GEAR TECHNOLOGY	Basic Skills in Repair and Construction	Deckhand Trawlerman **	
SAFETY	Marine Emergency Duties I Fire Fighting Survival First Aid	Marine Emergency Duties II Life Saving Survival First Aid	
BUSINESS PRACTICES	Business Practices and Recordkeeping Taxation Financial Decision Making		Small Plant Operator Recordkeeping Finance Management
QUALITY CONTROL	Included in Fishing Gear Program	Included in Trawlermen Course	Production Staff *** Line Chargehands

	INSHORE	OFFSHORE	PROCESSING
ADVISORY SERVICES	Fishing Gear Engineering	Design of Special Programs	Design of Special Programs

* Being developed for 1981-82.
** Certificate awarded on successful completion of examination, set and conducted by industry representatives.
*** Being developed with industry representatives for 1981-82.

Transport Canada Certificate Examinations

A heavy demand for training in navigation and safety led to an unprecedented number of courses being conducted during 1980-81. The main thrust of this demand came from the inshore fleet. While there is no current regulation for Transport Canada certification in this fleet sector, there is considerable interest in safety and navigation training leading to certification as Fishing Master Class IV.

The safety and navigation certification programs were conducted at the Fisheries Training Centre, Pictou and in 33 locations throughout the province.

For 1980-81, the Training and Field Service Division achieved the highest success rate in Canada in Transport Canada Navigation Certificate examinations and in addition trained the highest number of fishermen in Marine Emergency Duties I. The results are as follows:

Transport Canada Certificate	Number of Courses	Number of Fishermen Attended	Number of Fishermen Passed
Small Craft Master (40 Ton)	5	55	37
Fishing Master Class IV	13	182	157
Fishing Master Class III	5	47	37
Fishing Master Class II	1	7	5
Marine Emergency Duty I	20	244	243

Extension Programs in Fishing Communities

A breakdown of the training programs conducted in the fishing communities is as follows:

	No. of Courses	Students Enrolled	Students Discontinued	Students Completed
Navigation	17	209	10	199
Inshore Fishing Operations	15	240	10	230
Business Practices	11	153	9	144
Marine Emergency Duty	16	191	3	188
Small Gas Engines	3	26	2	24
Engine Watchkeeping	1	4	0	4

The planning and co-ordination of the programs in the fishing communities is facilitated through the work of the Department's Fisheries Representatives and the co-operation of Canada Manpower officials.

Fisheries Training Centre, Pictou

A breakdown of the courses held at Pictou is as follows:

1. Programs under Canada Manpower Institutional Training Program

	No. of Courses	Students Enrolled	Students Discontinued	Students Completed
Navigation	9	82	12	70
Able Fishermen	2	6	1	5
Marine Emergency Duty	4	44	0	44
Watchkeeper	4	18	3	15
Deckhand	4	44	10	34

2. Overseas Fishery Training - Joint Venture Nova Scotia

Department of Fisheries-Canadian Industrial Development Agency/ Voluntary Agricultural Development Assistance.

	No. of Courses	Students Enrolled	Students Discontinued	Students Completed
Refrigeration	1	4	0	4
Diesel Engines	1	5	0	5
Navigation	1	7	0	7

3. Other Government Agencies

Navigation	1	27	27	27

There has been a marked increase in the demand for fisheries training as shown by the following table:

Summary of Overall Training

	1978-79	1979-80	1980-81
Number of Courses	53	67	96
Number of Trainees	531	697	1,100
Number Completed	492	639	1,008

Pre-Sea Training

The pre-sea training course for new entries to the industry will be held at the Fisheries Training Centre in Pictou. The course has been designed to highlight the numerous career options available in the fishing industry and to introduce the participants to a range of skills in navigation, engineering, seamanship and fishing gear technology as an aid to assisting them in a career choice.

The fisheries training programs are designed to complement experience gained at sea with appropriate academic and skills courses in a systematic manner so that a young fisherman can clearly see a progressive career pattern.

FIELD SERVICE

The fiscal year was another busy one for the Field Service as it maintained an active presence for the Department in the fishing communities of Nova Scotia.

Industrial Development, the Fishermen's Loan Board, and Training were the most concentrated areas of involvement for the nine Fisheries Representatives who serve the various sectors of the industry in their respective geographical regions of the province.

A major role of the representatives was to inform fishermen and others in the industry about the various programs provided by the Department, particularly those of the Industrial Development Division, explained elsewhere in this report; to receive applications for assistance under these programs, and to rate each project on its impact and priority within the industry. Progress of these projects was also monitored.

Almost 1,000 applications for the Fishermen's Loan Board were handled by the Field Service with confidential reports being filed on the 914 applications that actually went to the Board. Loan information and financial advice were constantly being sought by fishermen with most of the initial contacts and follow-up inquiries directed through the Field Service.

The field personnel were also heavily involved with the planning and co-ordination of over 80 training courses provided in the fishing communities. Many students were also referred to the Fisheries Training Centre in Pictou where an outstanding year was recorded.

Information on Departmental programs and policies and those of other departments and agencies continued to be transmitted to the industry throughout Nova Scotia. Participation at meetings of fishermen, processors and, to a more limited degree, plant workers was very frequent, often involving evenings and weekends. Exhibitions, career days, and the like were additional examples of the public encounter aspect of the Field Service. Representation on the Marine Safety Advisory Committee, Scallop Advisory Committee, and the Fisheries Sector of the Annapolis Valley Affiliated Boards of Trade were among the industry committees some members served on during the past fiscal year.

Besides solving and trying to solve many individual and collective problems of fishermen, the Field Staff constantly relayed requests for improved harbour facilities, better navigational aids, boat subsidies,

licensing matters, and the like to federal departments for action. Lobbying for improvements remained a fundamental duty of the representatives and their manager.

Both federal and provincial employment programs were sponsored under the direction of the Fisheries Representatives for projects ranging from gear and shed construction to fact finding fishery surveys.

All proposed dumpsites for dredging spoils were discussed with local fishermen with recommendations being made to the Department of Environment to ensure that good fishing bottom was not spoiled. In many cases, alternate sites with accurate co-ordinates were supplied.

The proper administration of Fishermen's Reserves has been slowly evolving but it is expected that the Field Service will play an integral role in the joint management of these provincial land holdings. The Department of Lands and Forests and the Department of Fisheries will try to ensure that the Fishermen's Reserves are used only by bona fide fishermen. To achieve this end, permits will be issued to persons having buildings currently located on the numerous reserve locations while future permits will be issued only to fishermen.

As the fiscal year drew to a close, the Field Service was involved in a major program to identify roads to wharves needing upgrading and improvements. The Department of Transportation is planning to improve many of these roads and it is expected that a number of ports will benefit from the resulting better access to harbour facilities.

MARINE RESOURCES

This division has two basic roles: (1) to provide advice on the management of all marine fish stocks as they affect the industry of the province; and (2) to conduct biological programs in support of and supplementary to federal programs leading to improved management of stocks exclusive to Nova Scotia.

The first role involves membership on numerous fisheries management committees which advise on national as well as international management programs concerning groundfish, shellfish, pelagic fish, and the ramifications of offshore oil development on fisheries. This year, the division represented the province as an advisor on bilateral agreement negotiations, including tarriff rates, joint ventures, export quotas and foreign vessel quotas. Due to the many changes in federal management policies and regulations, this division acts as liaison between fishermen and the Department of Fisheries and Oceans on such matters as licensing, quotas, closures and gear restrictions. The division also provides interpretation and explanations of federal management plans and associated regulations to all sectors of the industry.

During 1980, the Nova Scotia Department of Fisheries began a research program addressing some of the biological concerns affecting the potential commercial harvest of kelp. The main research area was in Lobster Bay, Yarmouth County, since this will be the primary region where kelp harvesting could take place.

At present, three main questions are being addressed:

1) What is the effect of kelp removal on other marine plants, particularly Irish moss, within the harvested area?

2) What is the effect of kelp removal on its regeneration within the harvested area?

3) What is the optimal harvest schedule for maintaining a maximum sustainable yield from the resource, and will there be a need to employ specific conservation measures to assure longevity of the resource?

It is expected that this work will continue for at least another two years. By 1982-83, sufficient information will have been acquired on the biological consequences of kelp removal to formulate recommendations regarding the management of the commercial harvest of kelp.

During the 1980 field season, the research program investigating the growth and survival of one to two month old stage four lobsters was continued. The lobsters were placed in controlled environments and observed for varying periods of time. A hatchery, which was established at Dalhousie University, provided over 10,000 baby lobsters for field study. The research is generating valuable information on the lobster's life phase which over the years has puzzled scientists. Studies will continue in 1981 in attempts to further our knowledge of the ecology of this most important crustacean species.

An underwater research team located in Isle Madame conducted the field work associated with the juvenile lobster program. In addition, this group participated in benthic studies conducted in the Bras d'Or Lake and St. Georges Bay. These studies were carried out to observe the benthic environment for any noticeable changes associated with a seismic survey and Irish moss raking.

As part of the 1980 port sampling program, students employed by the Department collected data on lobsters and crabs at fishing ports around the province. Biological information, including size frequencies, maturity sizes and catch per unit of effort, was collected and will be used to assess the present and projected state of the local fisheries.

The pelagic section of the division again conducted biological studies to determine growth and reproductive patterns of local herring stocks. These studies included catch and effort data in the Pictou area and tagging of herring in Pictou and in the Bras d'Or Lake, to determine the migration patterns of the fish and the degree of intermixing of stocks.

A study commenced on gaspereau in the Pictou Harbour river systems. Little is know about this species, and in order to better manage this fishery, fish were tagged with the hope of determining the extent of "homing" to spawning river.

This section also conducted a study on the effect of seismic profiling on the fish in the Bras d'Or Lake through both surface and underwater observations.

ESTUARINE AND INLAND FISHERIES

This division is responsible for planning, developing and carrying out Departmental policies and programs to conserve and enhance the fisheries resource at the land-water interface.

Major responsibilities include:

1) carrying out resource inventories of estuarine species - gaspereau, eels, soft shell clams and the like - for input to resource management decisions, commercial development and land use planning,

2) carrying out pilot scale studies, applied research and extension work associated with the development of aquaculture opportunities in shellfish (oysters, mussels) and finfish in estuarine and inland waters,

3) providing departmental input to both provincial and federal agencies and intergovernmental committees concerned with managing the resource base in the coastal zone.

The division maintains and operates its own oyster hatchery at Pleasant Point, Halifax County, as well as a pilot scale demonstration site in adjacent waters for off-bottom oyster and blue mussel culture.

European Oyster Culture

The introduction of the European flat oyster to the Atlantic Coast of Nova Scotia seems to have been quite successful. Biologically, this filter feeding mollusc exemplifies a fast growth rate, survives well at prolonged low water temperatures and its symmetrical shell shape makes it very attractive for the gourmet half shell market. Contract genetic research with Dalhousie University has indicated that favourable characteristics can be selected: fast growth rate, temperature tolerance, shell shape, weight and the like. This type of research has been going on since 1977 and, because of the characteristics being selected, a two to three year time period is required for concrete results.

This year, approximately 350,000 European oyster seed were transferred to four private groups for commercial assessment. Field results to date indicate excellent survivor and growth rate. Results on selective lines have shown a 21 to 41 per cent increase in average weight and a 12 per cent increase in survival rate over control lines, and that market size oysters (3 inches, 7.6 cm) can be obtained from off-bottom culture in three years.

Potentially this has great economic significance to the commercial grower both in terms of early cash flow and effective use of grow out technology.

Division staff are continuing studies on comparative growth rates using various densities, depths and tray types at six selected sites along the Eastern Shore. These results, when added to the results obtained from current exploratory commercial operations from Lunenburg to Canso, will provide excellent baseline data upon which site selection and commercial expansion can be planned. As well, our continued work with Dalhousie and hatchery production at Pleasant Point should provide another 2 to 3 million selected seed for outplanting this coming year. Concomitant to the genetic studies is the development of the most effective and adaptable hatchery techniques of producing seed stock for commercial grow out. The immediate objective in both genetic research and hatchery technique experiments is to be able to transfer and apply the results to commercial production. It is expected that full scale commercial production of the European flat oyster will be firmly established by the end of the 1981 year.

The market potential for this species in Canada is not known because until this year there were insufficient quantities to adequately test the market. However, based on the high European population in Canada, it could be expected that traditional taste preference for this species will be shown. Handling and storage studies indicate that this species can be delivered to the marketplace in excellent condition. Thus, based on both experiment research and development to date, significant commercial opportunities are expected to emerge from this aquaculture area.

Blue Mussel Culture

The division has maintained its blue mussel culture demonstration project at Pleasant Point, Halifax County, with both raft and longline grow out culture technology. Spatfall monitoring has been continued at 6 selected sites on the Eastern Shore. The division is heavily involved in extension work related to the commercial development of blue mussel culture in the province. To date, three commercial operations have been initiated. The coming year's private sector efforts should be crucial to whether this type of aquaculture will expand. There are some grow out legislative, technological and biological constraints yet to overcome and, again, as with the European oyster, the market potential is unknown. The commercial crop should provide a better indication of current and future market potential. Current indications from those producing and selling cultured mussels locally, and out of province, are very positive. A report on pilot scale research and development work to date is available from the Department.

In response to the current legislative constraints, the Department, through consultation with the aquaculture industry, has contracted Dalhousie Law School to prepare new enabling legislation for the conduct and development of aquaculture in the province. This is a further commitment (the Department, through the Fishermen's Loan Board, provides capital equipment loans to prospective qualified aquaculturists) by the Department to the promotion of economic opportunities from our fresh and estuarine water systems.

Other Activities

Contracted research into the study and control of biofouling organisms on both culture species and the grow out technology is continuing. Fouling organisms often constrain the normal growing behaviour of cultured species, limit water circulation and transport, and degrade the market appearance of the cultured product. Also, control becomes a significant economic cost factor in the production process. Thus ways and means of reducing the biological, physical and economic impact of fouling organisms in the culture process are being explored.

A report on the biology and constraints to commercial exploitation of the silver hake fishery has just been completed and will be available shortly. This report is a concise summary prepared through literature research and contact with those in the industrial sector.

A two month site specific survey, attempting to illustrate the impact of recreational clam digging on a commercial clam fishery, was carried out in the past summer. The data is currently being collated and analysed.

The division collaborated with other government departments in carrying out sanitary and bacteriological surveys related to estuarine shellfish fisheries. In conjunction with another Crown agency, the division has been carrying out hydrographic studies related to the utilization of thermal effluents to enhance aquaculture production.

In order to provide better baseline data for economic development in our estuarine areas, the division is upgrading and having prepared a mapping of estuarine fisheries resources and commercial undertakings in the province. This series of maps will be available from the Department in early spring.

The Department is also having prepared a fisheries atlas graphically describing the distribution of the involvement of the fishery in the province.

This atlas will serve as descriptive resource material for both other government agencies and the general public. It is anticipated that the atlas will be available to the public in early May of 1982.

Division staff also serve on a host of committees providing co-ordinated input to decision making related to the fisheries resource and other water and land use activities.

PLANNING AND FINANCE

This division provides administrative support to the Department as a whole, including financial, personnel and office services. In addition, planning, economics and statistical services are provided to the Department. Educational services, as well, are provided to both the industry and the general public.

Market development and promotion is an increasingly important part of the division, since there is a growing need to improve the marketing and market opportunities for Nova Scotia fisheries products.

Some of the major projects undertaken by the division during the year under review include:

Economic Studies and Projects

(a) Metrication

The Department is involved in the metric conversion of the fishing industry. A growing part of Canada's export market will be or is at present metric and so this conversion is extremely important for the industry. The changeover target date is January 1982 and the Department's participation will be primarily to keep the industry well informed so as to make the changeover as smooth as possible.

(b) Economic Analysis of New 45-foot and 65-foot Trawlers

As a result of the expressed concerns about the economic viability of some new 45-foot and 65-foot trawlers, profit (loss) statements were prepared for such vessels based upon capital and operating costs for a year's operation with a variety of catch scenarios. The results were compared to the actual distribution of catches by all 45-foot and 65-foot trawlers in the province in 1979, to indicate the proportion of such vessels that could be expected to be profitable.

(c) Cost and Earnings Study of Fishing Vessels

The Department continued the annual Cost and Earnings Study of fishing vessels in Nova Scotia. This study, undertaken in co-operation with the federal Department of Fisheries and Oceans, consists of collecting and analysing catch statistics and operating costs from a cross section of vessels and gear types fishing in the province. These studies provide data on the

economics of various sizes and types of fishing vessels. Such information is necessary for effective fisheries management, and for assessing the viability of new vessel construction in the light of changing economic conditions in the fishery.

(d) Nova Scotia Port Profiles

Statistical tabulations on a port, regional and provincial basis were updated for 1980. These tabulations identify the level of fishing and processing activity at each port. Information contained in the port profiles includes a count of fishermen; the number of vessels; fish landings and values; fish processors, products and capacities, including cold storage, bait freezing and ice making. Fishery infrastructure, both for land-based and sea-based activity is also listed along with identified deficiencies.

Market Development and Promotion

(a) Promotional-Educational - General

A continuing effort is being made to educate the public to the benefits of eating seafood. The home economist on staff with the Department of Fisheries has participated in trade shows both in and out of the province to promote seafood consumption. In addition, the program included mall displays, media events, seminars for the food service industry, and participation in Nutrition Week and similar events.

The Department of Fisheries, in co-operation with the Departments of Health; Agriculture and Marketing; and Education prepared and printed a reference binder to be used as a teaching aid in public schools. One section of the binder contains information on seafood, its nutritional qualities, and preparation. Included in the binder was a redeemable coupon to be used by the home economics teachers towards the purchase of fish for class demonstrations.

(b) Western Canada Fish Promotion

In co-operation with the Nova Scotia Department of Development, a three city promotion was organized during October. Trade receptions were held in Vancouver, Calgary and Edmonton, at which buyers and large institutional users could meet with processors and sample, firsthand, Nova Scotia seafood. The response to the receptions was very good and the event received wide media coverage in the cities visited. The Department was responsible for the organization and presentation of the seafood dishes

offered at the receptions. A recipe pamphlet, featuring the seafood recipes, was published by the Department for use at the receptions and for general distribution.

(c) Developmental Projects

Two projects were begun in February 1981 to assess the feasibility of producing stockfish in Nova Scotia. Stockfish or dried fish has an expanding market in West Africa because of its high protein content and the fact it requires no refrigeration. Nigeria, the largest market in West Africa, imports 200,000 metric tons of stockfish annually. Although final assessment of the product is not yet possible, indications at this stage are that the product can be successfully dried in Nova Scotia.

(d) Publications

A Directory of Fish Products for Nova Scotia was published by the Department during the summer of 1980. Interested processors were asked to provide a detailed list of their products. The directory was published in two versions: a pocket size pamphlet and a larger glossy version containing the detailed product listing. To date, it has been distributed at trade shows in Europe, the United States and Canada, to Canadian Trade Officers worldwide, and in response to requests. The directory has proven to be a beneficial tool in assisting buyers in locating the appropriate supplier.

A newsletter indicating prices for selected products and markets is issued on a monthly basis to industry. The newsletter contains price quotes from a variety of sources in Europe, the United States and Japan. The newsletter is intended to give a general indication of prices and must be interpreted in relation to the type of market in which the fish is being sold.

Resource Education Services

(a) Information System

Through the Bureau of Management Consulting and Computer-Communications Services, a thorough analysis of the Department's information retrieval and data processing needs was completed. By year end, the Department was in a position to proceed with the acquisition of a computer system that will provide significant improvements in data storage and processing for all divisions.

(b) Newsletter-Handbook

During the year under review, it was decided to terminate the publication of newsletters and to replace them with an annual information handbook for fishermen. This publication will contain pertinent information on all departmental programs as well as other provincial programs of particular interest to fishermen. By year end, the first edition of the handbook was in the printing stage and distribution is expected early in the new fiscal year.

(c) Weatheradio Atlantic

This program, started in the last fiscal year on a cost-shared basis with Environment Canada, continued successfully. However, plans to add two more stations to complete service to the province had to be postponed when it became apparent that servicing the mountainous northern tip and Gulf coast of Cape Breton Island would be more difficult than anticipated. By year end, it was decided that one station would be located at Cape North with the second station to be located near East Point, Prince Edward Island. Preliminary work was also underway to test the feasibility of additional stations at Grindstone Island in the Magdalens and on Sable Island.

(d) Publications

The Department published six new brochures-booklets during the year under review, primarily in the marketing and seafood promotion area. However, a significant accomplishment was the publication of a provincial Fisheries Policy which descibes the government's policies regarding the future development of the Nova Scotia fishery. In addition to the new publications, eight existing ones were revised and updated.

(e) Underwater Photography

Work continued in this area to build a library of colour photographs of our major fish species. Three new species were added in the fiscal year under review, and several additional photos of species already in the library were added to provide variety.

(f) Exhibitions

The Department entered exhibits at three major fisheries-related exhibitions in Nova Scotia during the year. These included the Nova Scotia Fisheries Exhibition and Fishermen's Reunion in Lunenburg, the Lobster Carnival in Pictou, and the Western Nova Scotia Exhibition in Yarmouth.

STATISTICAL REVIEW

All fisheries production statistics given here for the calendar year 1980 are revised figures supplied through the courtesy of the federal Department of Fisheries and Oceans. They may be subject to minor adjustment as late returns from firms and individuals are received and processed in the Department.

NOVA SCOTIA FISHERIES MAJOR SPECIES LANDINGS OF THOSE SPECIES YIELDING OVER ONE MILLION DOLLARS ANNUALLY

(Listed in Descending Order of Value in 1980)

	Landings (Metric Tons)		Value (Thousand Dollars)	
	1980	**1979**	**1980**	**1979**
1. Scallops	65,348	85,973	63,736	71,607
2. Cod	116,652	106,410	42,732	38,266
3. Lobsters	6,472	7,366	33,770	33,737
4. Haddock	51,351	33,113	25,488	15,480
5. Herring	81,792	49,002	19,545	10,724
6. Flounders	23,444	19,092	8,547	6,191
7. Pollock	33,746	29,273	8,395	6,590
8. Swordfish	1,886	2,971	4,170	8,150
9. Halibut	1,675	1,406	4,133	3,707
10. Shrimp	1,643	782	3,858	1,335
11. Redfish	16,340	26,304	3,360	5,770
12. Hake	8,656	5,776	2,196	1,464
13. Mackerel	7,267	9,111	1,674	2,052
14. Cusk	4,548	4,910	1,532	1,743
15. Crabs	2,708	2,782	1,428	1,841
16. Alewives	4,207	4,147	1,087	571

Table I

Nova Scotia Fisheries
Landed and Marketed Value
1950 - 1980

(Valued in thousand dollars)

Year	Landed Value	Marketed Value
1950	21,400	38,819
1955	23,582	47,093
1960	26,094	51,753
1965	49,371	93,443
1970	55,562	105,939
1975	91,010	208,574
1976	106,329	251,705
1977	132,835	315,943
1978	195,133	441,305
1979	215,007	418,311
1980	230,911	535,714 (1)

(1) This is an estimate based upon recent average past relationships between landed and marketed values.

Table II

Nova Scotia Fisheries
Landings and Landed Value by Species Groups

	Landings (Metric Tons)		Landed Value (Thousand Dollars)	
	1980	**1979**	**1980**	**1979**
Groundfish	261,669	236,768	97,866	80,210
Pelagic and Estuarial	95,876	65,941	27,579	22,346
Molluscs and Crustaceans	79,184	104,343	104,426	111,031
Miscellaneous (1)	10,806	14,117	1,034	1,417
Fish Viscera, Scales (2)	14	6	6	4
	447,549	415,176	230,911	215,007

(1) Seaweeds, worms.

(2) Livers, tongues, scales, roes, liver oil, skins.

Table III

Landed Value of Fisheries by Counties

(Value in thousand dollars)

County (1)	Landed Value (2) 1979	1980	Per Cent Change (3) 1979-80
Lunenburg	64,260	58,067	- 9.6
Shelburne	38,382	36,311	- 5.4
Digby	27,460	29,650	+ 8.0
Yarmouth	19,398	27,126	+ 39.8
Cape Breton	16,028	21,217	+ 32.4
Guysborough	11,539	15,451	+ 33.9
Queens	9,959	10,048	+ 0.9
Halifax	8,850	12,172	+ 37.5
Inverness	5,517	6,245	+ 13.2
Victoria	3,742	3,983	+ 6.4
Richmond	3,195	3,557	+ 11.3
Pictou	2,618	2,787	+ 6.5
Antigonish	1,814	1,909	+ 5.2
Annapolis	1,074	1,050	- 2.2
Colchester	504	529	+ 5.0
Cumberland	400	427	+ 6.8
Kings	262	317	+ 21.0
Hants	5	65	+ 1200.0
	215,007	230,911	+ 7.4

(1) Counties are in order of the 1979 landed value.

(2) Landed value includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+); Decrease (-).

Table IV

Total Landed Weight of Fisheries by Counties

(Weight in Metric Tons)

County (1)	Landed Weight (2) 1979	1980	Per Cent Change (3) 1979-80
Lunenburg	118,207	101,965	- 13.7
Shelburne	56,581	58,023	+ 2.5
Cape Breton	47,085	58,954	+ 25.2
Digby	46,525	45,826	- 1.5
Guysborough	35,878	44,932	+ 25.2
Yarmouth	31,057	50,766	+ 63.5
Halifax	25,908	28,075	+ 8.4
Queens	16,706	16,128	- 3.5
Inverness	11,729	14,481	+ 23.5
Richmond	10,489	11,440	+ 9.1
Victoria	5,908	6,986	+ 18.2
Pictou	3,124	3,807	+ 21.9
Annapolis	2,284	1,716	- 24.9
Antigonish	1,873	2,734	+ 45.9
Colchester	1,085	681	- 37.2
Kings	411	430	+ 4.6
Cumberland	318	328	+ 3.1
Hants	8	277	+ 3363.0
	415,176	447,549	+ 7.8

(1) Counties are in order of the 1979 landed weight.

(2) Landed weight includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+); Decrease (-).

Table V

Landed Weight and Landed Value of Fisheries by Species Group by Counties (1979-1980)

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ('000)	
		1979	1980	1979	1980
Annapolis	Groundfish	765	1,042	353	503
	Pelagic	975	64	180	17
	Shellfish	544	610	539	529
	Other	--	--	2	--
Antigonish	Groundfish	635	1,368	133	315
	Pelagic	116	250	58	163
	Shellfish	478	430	1,538	1,340
	Other	644	686	85	91
Cape Breton	Groundfish	31,370	40,871	9,306	13,123
	Pelagic	13,125	16,333	3,166	4,735
	Shellfish	2,585	1,750	3,552	3,359
	Other	5	--	4	--
Colchester	Groundfish	25	22	53	32
	Pelagic	527	79	95	59
	Shellfish	533	580	356	437
	Other	--	--	--	--
Cumberland	Groundfish	47	51	22	25
	Pelagic	173	166	54	94
	Shellfish	98	110	324	307
	Other	--	1	--	1
Digby	Groundfish	20,040	21,408	8,270	10,077
	Pelagic	8,019	8,449	1,608	1,799
	Shellfish	18,466	15,969	17,580	17,774
	Other	--	--	--	--
Guysborough	Groundfish	28,722	31,898	9,149	10,538
	Pelagic	4,256	11,909	1,299	2,929
	Shellfish	2,900	1,125	1,091	1,984
	Other	--	--	--	--

Table V Continued

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ('000)	
		1979	1980	1979	1980
Halifax	Groundfish	21,264	24,185	6,669	8,685
	Pelagic	3,713	3,482	949	1,985
	Shellfish	931	408	1,232	1,502
	Other	--	--	--	--
Hants	Groundfish	--	14	--	10
	Pelagic	8	220	5	29
	Shellfish	--	43	--	26
	Other	--	--	--	--
Inverness	Groundfish	7,582	9,764	2,074	2,660
	Pelagic	2,312	2,527	318	592
	Shellfish	1,682	2,190	3,105	2,993
	Other	153	--	20	--
Kings	Groundfish	93	162	69	120
	Pelagic	283	257	144	116
	Shellfish	35	11	48	81
	Other	--	--	1	--
Lunenburg	Groundfish	56,881	58,505	15,538	18,006
	Pelagic	3,360	3,004	725	861
	Shellfish	57,966	40,456	47,999	39,200
	Other	--	--	--	--
Pictou	Groundfish	863	597	211	144
	Pelagic	1,162	1,990	296	919
	Shellfish	677	647	2,060	1,649
	Other	422	573	51	75
Queens	Groundfish	7,805	8,250	3,740	4,351
	Pelagic	2,584	3,495	377	1,013
	Shellfish	6,317	4,383	5,842	4,684
	Other	--	--	--	--

Table V Continued

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ('000)	
		1979	1980	1979	1980
Richmond	Groundfish	9,596	10,108	2,767	3,056
	Pelagic	642	1,108	127	277
	Shellfish	251	224	301	224
	Other	--	--	--	--
Shelburne	Groundfish	38,671	41,978	19,084	20,961
	Pelagic	6,934	7,342	8,934	4,248
	Shellfish	2,506	1,907	9,716	10,624
	Other	8,470	6,796	648	478
Victoria	Groundfish	1,346	2,613	499	972
	Pelagic	2,842	3,113	872	897
	Shellfish	1,720	1,260	2,371	2,114
	Other	--	--	--	--
Yarmouth	Groundfish	5,109	8,833	2,273	4,286
	Pelagic	14,887	32,088	3,139	6,844
	Shellfish	6,632	7,081	13,378	15,608
	Other	4,429	2,764	608	388

(1) "Pelagic" includes pelagic and estuarial.
"Shellfish" includes molluscs and crustaceans.
"Other" includes livers, tongues, scales, roe and oil, sea plants, mammals, worms.

Table VI

Atlantic Provinces Landings and Landed Values - 1980

	Landed Weight (Metric Tons)	Landed Value ($000)
Nova Scotia	447,651	230,911
Newfoundland	498,616	157,071
New Brunswick	107,185	48,752
Prince Edward Island	49,531	26,773
Quebec	81,092	41,721

Table VII

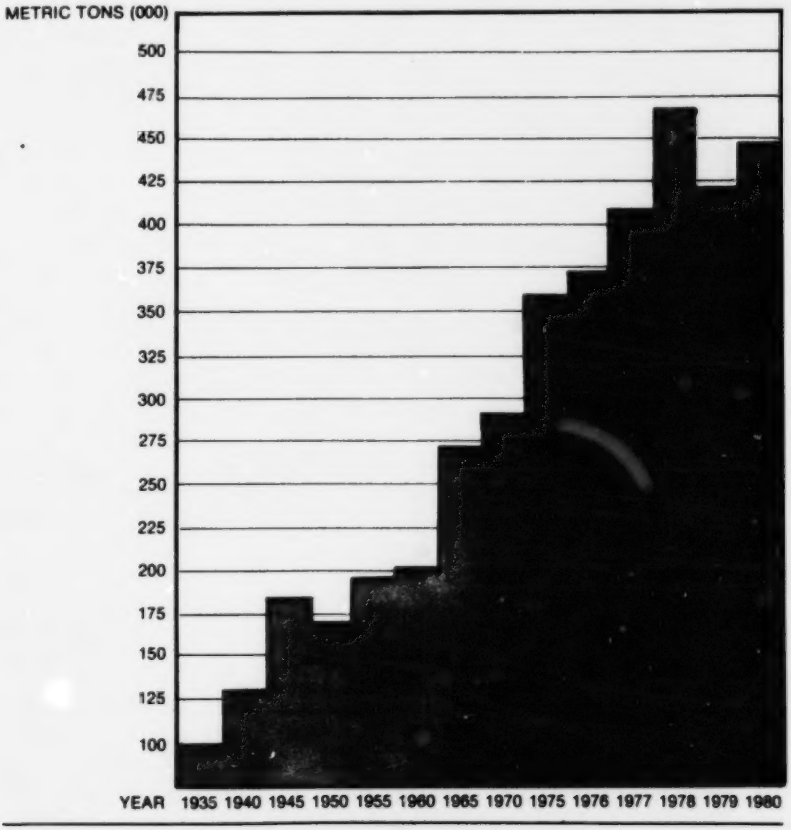
Nova Scotia Fishery Profile
Employment

Fishermen -	Full-time (10 months or more - 1980)	5,519
	Part-time (5-10 months - 1980)	1,723
	Occasional (less than 5 months - 1980)	4,190
		11,432
Plant Workers - Yearly average - 1979		6,126
Plants and Processors -	Operating 12 months	109
	Operating 5-10 months	70
	Operating less than 5 months	7
		186

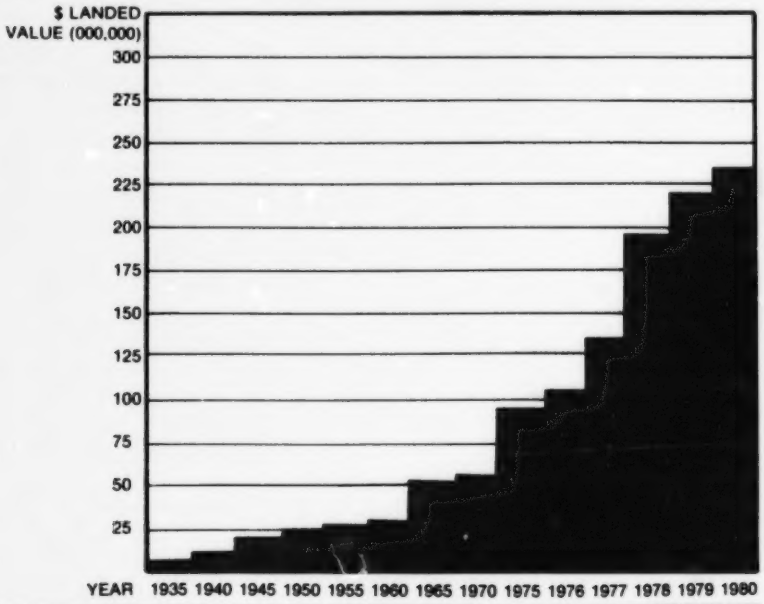
Fishing Craft

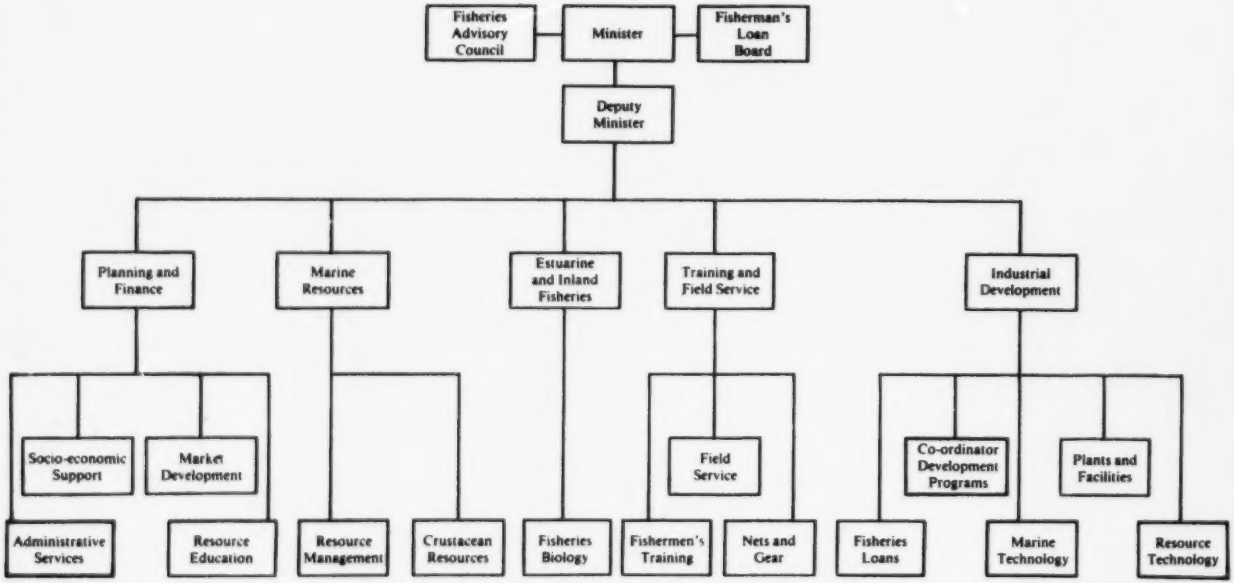
Tons	Number of Boats	Value ('000)
0 - 9.9	4,782	14,800
10 - 25.9	1,633	23,800
26 - 49.9	147	18,200
50 - 99.9	98	11,200
100 - 149.9	22	5,300
150 - 499.9	109	50,300
500 +	35	77,700
	6,916	201,300

Nova Scotia
Landings Profile



Nova Scotia
Landed Value Profile





ORGANIZATION CHART
NOVA SCOTIA DEPARTMENT OF FISHERIES

Department of Fisheries
Telephone 424-4560 - Halifax
485-4525 - Pictou
485-5056 - Pictou

Minister	Hon. Ken Stretch	Halifax
Secretary to Minister	Mrs. S.M. Grandy	Halifax
Deputy Minister	D.A. MacLean	Halifax
Secretary to the Deputy Minister	Miss M.L. Evans	Halifax
Planning and Finance Division		
Director	G.R. Richard	Halifax
Secretary to the Director	Ms. J.L. Ganner	Halifax
Supervisor, Socio-Economic Support	D.C. Thomas	Halifax
Market Development Officer	Ms. J.L. Ra[illegible]nd	Halifax
Seafood Consultant	Mrs. A.E. Bryant	Halifax
Resource Education Officer	K.R. Weston	Halifax
Field Officer	G.E. Coles	Halifax
Supervisor, Administrative Services	C.G. Allen	Halifax
Personnel-Payroll Clerk	Mrs. D.A. Boudreau	Halifax
Accounting Clerk	P.J. Foran	Halifax
Accounting Clerk	Miss N.A. Smith	Halifax
Clerk Typist	Mrs. J.A. Pepper	Halifax
Clerk Receptionist	Miss S.J. Kane	Halifax
Equipment Officer	A.S. Munro	Pictou
Marine Resources Division		
Director	A.A. Longard	Halifax
Secretary to the Director	Mrs. M.N. Pepper	Halifax
Supervisor, Crustacean Resources	S.G. Roach	Halifax
Resource Management Analyst	B.D. Smith	Halifax
Estuarine and Inland Fisheries Division		
Director	L.L. MacLeod	Pictou
Secretary to the Director	Vacant	Pictou
Biologist	B.C. Muise	Ostrea Lake
Maintenance Worker	R.A. Truen	Ostrea Lake
Industrial Development Division		
Director	J.A. Marsters	Halifax

Secretary to the Director	Mrs. M.E. Woolaver	Halifax
Co-ordinator, Development Programs	D.F. Hansen	Halifax
Incentive Programs Assistant	Mrs. M.E. Meagher	Halifax
Development Officer	R.C. MacLean	Halifax
Manager, Marine Technology	A.G. Boyden	Halifax
Supervisor, Vessels	Vacant	Halifax
Fisheries Technician	O.E. Egilsson	Pictou
Supervisor, Plants and Facilities	G.B. Scott	Halifax
Fisheries Technician	W.J. MacDonald	Halifax
Port Facilities Engineer	M.F. Giles	Halifax
Supervisor, Resource Technology	M.A. Drebot	Halifax

Industrial Development Division - Nova Scotia Fisheries Loan Board

Executive Director	J.A. Marsters	Halifax
Secretary to the Director	Mrs. M.E. Woolaver	Halifax
Co-ordinator, Development Programs	D.F. Hansen	Halifax
Incentive Programs Assistant	Mrs. M.E. Meagher	Halifax
Development Officer	R.C. MacLean	Halifax
Manager, Marine Technology	A.G. Boyden	Halifax
Supervisor, Vessels	Vacant	Halifax
Fisheries Technician	O.E. Egilsson	Pictou
Supervisor, Plants and Facilities	G.B. Scott	Halifax
Fisheries Technician	W.J. MacDonald	Halifax
Port Facilities Engineer	M.F. Giles	Halifax
Supervisor, Resource Technology	M.A. Drebot	Halifax

Industrial Development Division - Nova Scotia Fisheries Loan Board

Executive Director	J.A. Marsters	Halifax
Manager, Fisheries Loan	E.A. MacIntosh	Halifax
Secretary to the Manager	Mrs. N.L. Riles	Halifax
Secretary	Miss N.E. Corkum	Halifax
Chief Accountant	C.E. Decker	Halifax
Accounting and Insurance Clerk	Mrs. L.M. Fraser	Halifax
Accounting Clerk	Mrs. B.J. Tribble	Halifax
Loan Officer	J.P. Sarty	Halifax
Loan Officer	B.M. Allen	Halifax
Loan Officer	B.E. Cox	Halifax

Assistant Loan Officer	Mrs. L.M. Provender	Halifax
Loan Administrator	A.D. Chalmers	Halifax
Technical Services Officer	M. Myketyn	Halifax
Fishing Vessel Inspector	B.G. Stockley	Halifax
Fishing Vessel Inspector	R.G. Wilkie	Pictou
Fishing Vessel Inspector	W.R. Buffett	Halifax
Fishing Vessel Inspector	T. Prewett	Halifax

Training and Field Service Division - Training

Director	J.J. McLevey	Halifax
Secretary to the Director	Mrs. B.J. O'Brien	Halifax
Supervisor, Fisheries Training Centre	D.F. Robertson	Pictou
Chief Clerk	Miss S.M. Bowron	Pictou
Instructor (Navigation)	L.M. Dube	Pictou
Instructor (Nets and Gear)	A.A. Kaiser	Pictou
Instructor (Navigation; Marine Emergency Duty)	D.B. MacCallum	Pictou
Instructor (Engines)	G. Michor	Pictou
Instructor (Engines)	Vacant	Pictou
Instructor (Engines)	Vacant	Pictou
Instructor (Engines)	J.W. Grant	Pictou
Instructor (Business)	Miss B.J. Wright	Pictou
Training and Fishing Gear Co-ordinator (Nets and Gear)	M.P. Picco	Pictou
Instructor (Navigation)	A.F. Tobey	Pictou
Maintenance Worker	E.G. Dalton	Pictou
Maintenance Worker	C. Steele	Pictou

Training and Field Service Division - Field Service

Supervisor, Field Services	C.F. MacKinnon	Halifax
Fisheries Representative	G.A. Nickerson	Clark's Harbour
Fisheries Representative	A.J. Muise	Middle West Pubnico
Fisheries Representative	A.P. Kehoe	Petit de Grat
Fisheries Representative	E.J. Pellerin	Dartmouth
Fisheries Representative	C.W. Rankin	Pictou
Fisheries Representative	L.A. Tobey	Port Hood
Fisheries Representative	R.K. McDormand	Granville Ferry
Fisheries Representative	G.T. Boudreau	Little Dover
Fisheries Representative	G.C. Mossman	Rose Bay

DEPARTMENT OF FISHERIES

Ordinary Expenditures

Fiscal Year Ending March 31	Total Ordinary Expenditure
1965	$ 230,787
1966	340,653
1967	321,742
1968	530,166
1969	412,577
1970	458,034
1971	1,020,778
1972	1,373,784
1973	908,457
1974	3,138,359 (1)
1975	1,088,534
1976	661,763
1977	2,350,456
1978	3,149,131
1979	5,377,213
1980	5,841,649
1981	11,047,135 (2)

(1) More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June 1973.

(2) This includes $5,009,667 in capital advance interest charges for the Fishermen's Loan Board previously accounted for under Department of Finance Estimates. It is anticipated this accounting procedure will continue making a significant impact on the total ordinary expenditures.